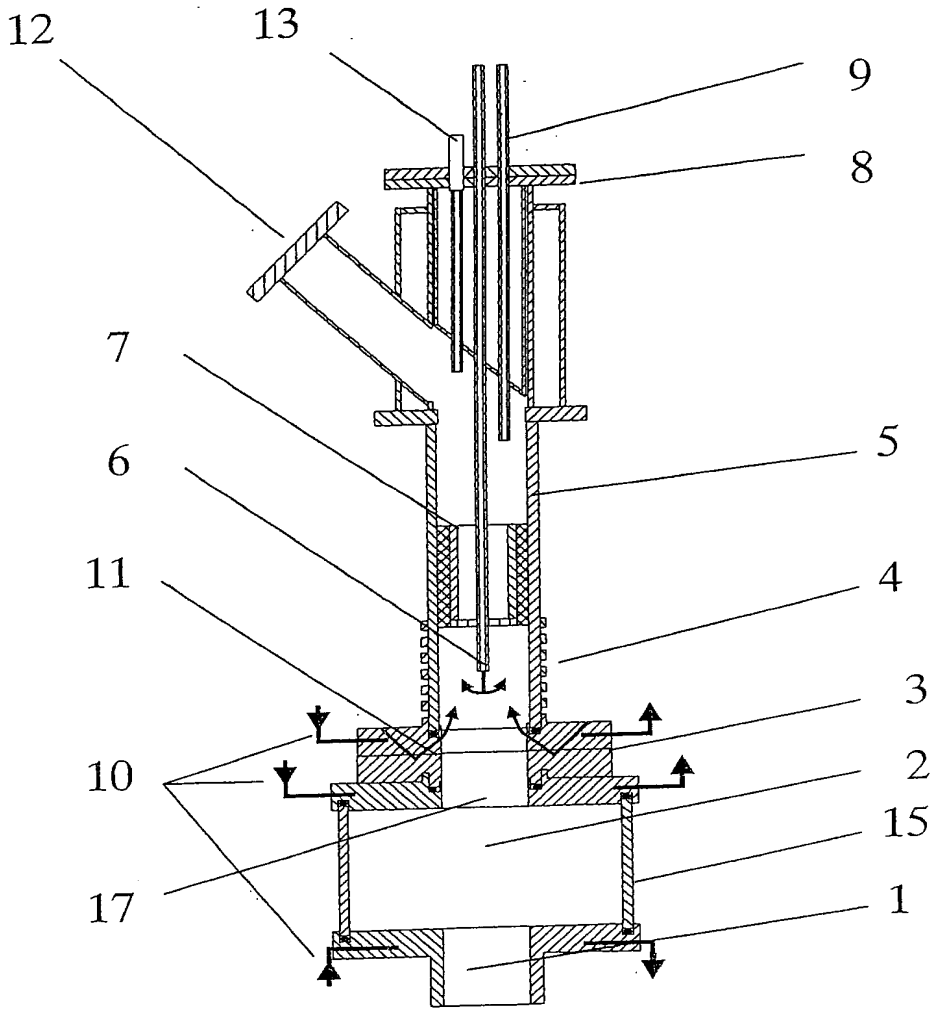

Fig. 1

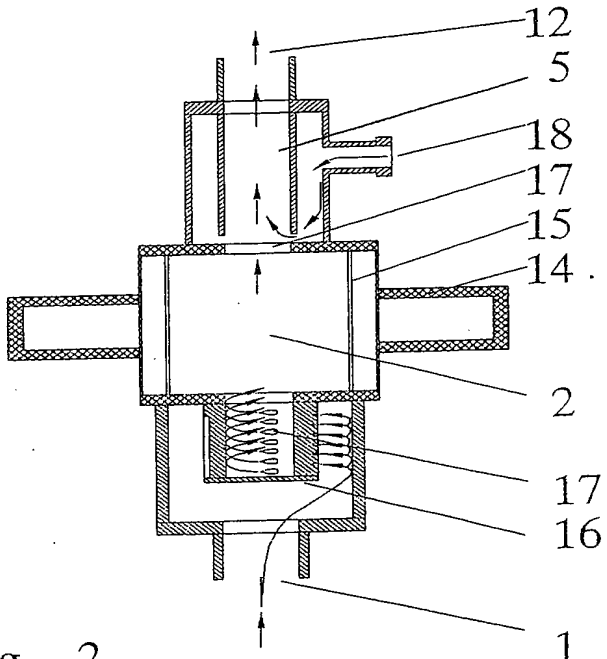

Fig. 2

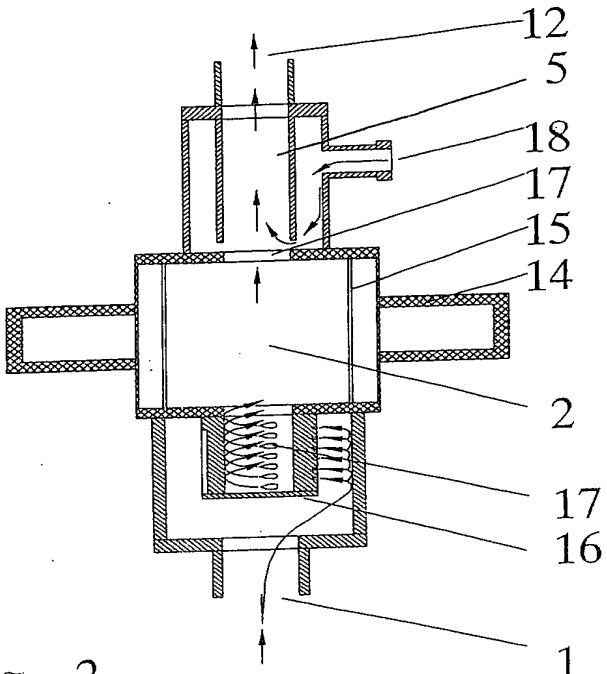

Fig. 2

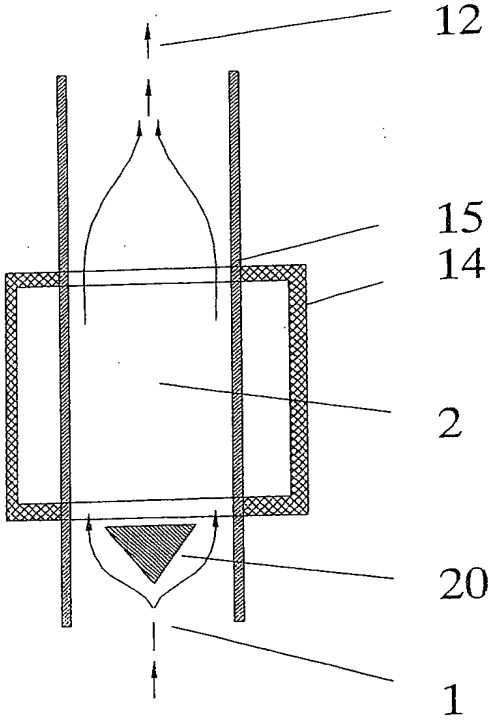

Fig. 3

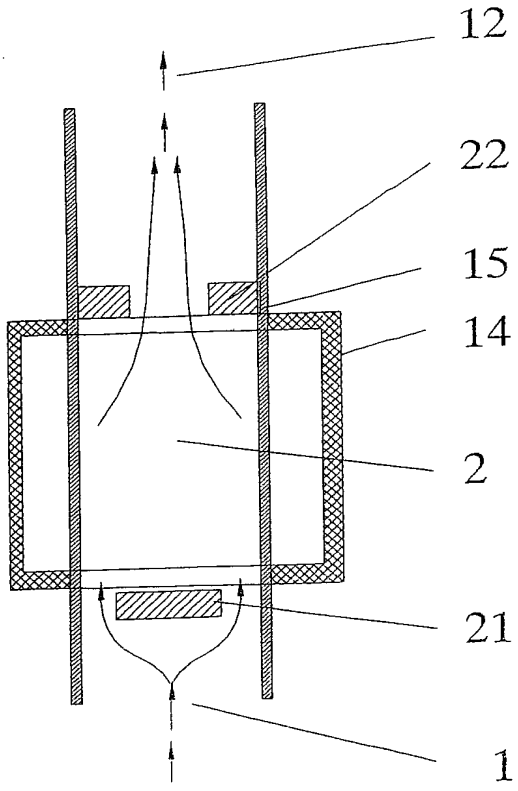

Fig. 4

Figure 5

Production of synthesis gas without addition of hydrogen				
$CO_2 + CH_4 \rightarrow 2\ CO + 2\ H_2$			$Ar/CO_2/CH_4$ = 68/18/13 %	
P = 4500 W	V = 40 l/min		No catalyst	
Conversion			**Yield**	
CO_2	CH_4	H_2	CO	H_2
0.91	0.99	-	0.83	0.93

Production of synthesis gas with addition of hydrogen				
$CO_2 + CH_4 \rightarrow 2\ CO + 2\ H_2$			$Ar/CO_2/CH_4/H2$=70/15/11/4 %	
P = 5000 W	V = 40 l/min		No catalyst	
Conversion			**Yield**	
CO_2	CH_4	H_2	CO	H_2
0.95	0.99	0.10	0.96	0.95

Production of acetylene				
$CO_2 + C_2H_4 \rightarrow C_2H_2 + CO + H_2O$			$Ar/CO_2/C2H_4$ = 73/21/6 %	
P = 3500 W	V = 38.5 l/min		No catalyst	
Conversion			**Yield**	
CO_2	C_2H_4	H_2	CO	C_2H_2
0.21	0.55	-	0.17	0.07

Production of benzene on copper catalysts				
$2\ CO_2 + 2\ C_2H_4 + 3\ H_2 \rightarrow C_6H_6 + 4\ H_2O$			$Ar/CO_2/C_2H_4/H_2$ = 66/19/9/6 %	
P = 4500 W	V = 42.5 l/min		Copper catalyst	
Conversion			**Yield**	
CO_2	C_2H_4	H_2	CO	C_6H_6
0.37	0.23	0.65	0.25	0.02